The American Practitioner.

APRIL, 1885.

Certainly it is excellent discipline for an author to feel that he must say all he has to say in the fewest possible words, or his reader is sure to skip them; and in the plainest possible words, or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want downright facts at present more than any thing else.—RUSKIN.

Original Communications.

OUR PERSONAL EQUATION.

AN ADDRESS DELIVERED BEFORE THE ALUMNI ASSOCIATION OF JEFFERSON MEDICAL COLLEGE, 1885.

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In preparing his thoughts for an occasion like this, a speaker who has had many predecessors will be lucky if he finds for his flail some straw left unbeaten by former threshers.

That repetition which in the class-room deserves the appellation "mother of learning," on the rostrum might be condemned with the forcible adjective applied by Othello to the iterations of Iago. The customary themes of medical orators—Medical Education, Expert Testimony, Sanitary Science, Professional Ethics—with the phrases staple in such discourses, have been worn quite threadbare.

The most fit for these halls, The Ideal Medical College, is one which were better left to some successor more sure of his own opinions, and more desirous of bringing the world into conformity with them. The old alumnus who has taken a turn through the hospital and the laboratories is no longer free to doubt that the process of evolution is carrying medical teaching

through ascending phases. Perhaps, with a conviction in favor of a graded curriculum, he is disposed to find fault with the annual repetition which, like a circle, makes no progress. If so, then his own experience as a student may be appealed to in proof that there was a decided advance where it was needed, namely, in his own medical knowledge. His second course of lectures was to him not the same as his first; it presented to his larger intelligence wider reaches than he could at first take in. The circle repeating itself, and so far as the student is concerned widening in each cycle by his mental growth, makes the spiral, the ideal course of philosophic teachers. As he looks about him he can see that the nursing mother moves with her Juno stride by sure paths, revealed to eyes that range under level brows. Step by step she has walked ahead of us, mending her pace as we quickened ours; never out of reach of good movers, yet always leading them. Shall we inveigh against the imperfections of our nurture who failed so often to hearken to the maternal voice. The faults most to be deplored were those in ourselves, that we did not use our opportunities better.

Then we daily sat down to a board of seven courses, and nibbled like dyspeptics at the generous fare for which we have since hungered.

Remembering the uniform perversity of mankind, it may fairly be questioned if the newly-adopted foster-brothers have done much better than we, notwithstanding the epicurean cooks who lately sharpened their dull appetites with savory sauces. There were great cooks in our day too, who could serve a lecture in a way to tempt an angel to learn medicine, however useless the art might be in the land without sickness.

Sitting under a broad porch which gave upon a lawn of that blue grass that makes fat cattle and glad harvests, I heard an old alumnus discourse of our *alma mater.* Said he: "They say that a man is thoroughly renewed every seven years. I want to go back to 'Old Jeff.' once for each renewal, in the hope that the new man will learn better the things new and old than did the former man what was taught in his time." He had been

back once to take draughts from the maternal font, but his business and his babies had since anchored him fast in Kentucky, and he consoles himself with the dream that, with other Jeffersonian angels, in Paradise he may again hear Dunglison tell about his experiments on Alexis St. Martin; Meigs dilate upon woman, and her glorious mission of motherhood; Gross lament in moving accents the lost art of phlebotomy; see Biddle wave a graceful salute before relating in rhythmic speech the opinions held by Dioscorides concerning the concrete juice of the unripe capsule of the *Papaver somniferum;* and Pancoast go through the dextrous motions of operations for which that happy land will furnish no clinical material.

It was a glad reunion, as I sat with that foster-brother that June day fifteen years ago and looked out on his waving corn and the gold-spotted meadow. I brought him news of the *alma mater*, and set him raking together the embers of old fires, and helped him blow them into something of their ancient warmth. Would that this occasion were less formal; that all of us might sit as by a family hearth, and each recount in turn the familiar things that lose none of their charm by age. We might hear some new-born brother tell of things the gray-beard thought his own peculiar experience. I am sure that my counterpart has sat on these benches since I left them. More than one callow youth has come out of the New West to this city of traditions, ready to wonder at Independence Hall, and at the Franklin Library, founded by the "Junto" of immortal memory. More than one, as he took an early pilgrimage to the grave at Fifth and Arch streets, has felt that Benjamin Franklin, like St. Paul, had been "a citizen of no mean city." More than one has had a fresh sense of his own importance as the elder Gross indorsed his letter of introduction and consigned it to a pigeonhole with other papers of weighty consideration. More than one — aye, thousands — with hearts touched by these small amenities from a great man to his insignificant students, have proved themselves bound to him with hooks of steel.

If I hold to my purpose, it is time to stop the flood of rem-

iniscences that stream in. It were grateful to all of us to celebrate the worthies of our college days and beguile the hour with retrospective ramblings. But such an eloquent tribute to their memory has been given in this place by one who preceded me seven years ago, that the thought of rivalry in this field oppresses me, and I turn to another theme for my word-spinning. In the half hour for which I feel privileged to hold you by the button, there is opportunity to air some reflections about *The Personal Equations* of medical inquirers. If I succeed in presenting familiar facts in a new grouping and in such a way as not to be disagreeable, then I shall be satisfied.

The importance of these considerations may not strike every one, for scientific inquiry often meets with the reception accorded by Confucius to the inquisitive boy. As Carlyle relates it, the boy asked Confucius, "How many stars are in the sky?" The sage replied "He minded the things near him." Then said the boy, "How many hairs are in your eyebrows?" Confucius answered, "He did n't know and did n't care."

About ninety years ago the Astronomer Royal of England regretfully announced that he had to part with his diligent and useful assistant, as he had lately acquired an inveterate habit of recording his observations half a second too late. The whirligig of time brought the assistant his revenge, as later astronomers put just as much reliance on his observations as on those of his principal. It was found that both were slightly wrong, both were liable to err, as are the most skillful observers. Indeed it is only when that various creature, man, is not a part of the machinery that we can put entire trust in the register.

These variations from the absolute truth in measuring minute divisions of time and space can be estimated by comparison with instruments of precision, and are usually found to be constant for the same person in the same class of observations. The habitual error, characteristic of a person, is called his *personal equation*, and is a correction to be applied to his record of all events of like nature. Time is an element, first in perceiving, next in willing, last in recording. These processes in different

men go on with varying degrees of rapidity. As quick as thought is, there is time in it for some to fall behind others. Astronomers tell us that there are variations in researches that do not rank as precise which are more marked than those just referred to. It is probable that examples of *personal equation*, using the term in its widest sense, are to be found in every form of inquiry. As instances of it in observations that do not admit of mathematical measurement, we are told of the different pictures drawn by different observers of nebulæ and the corona of solar eclipse. It would be an easy problem for some ophthalmologist to determine if unsuspected and uncorrected astigmatism may not account for some of the variations, as Liebreich showed its effects in certain peculiarities of Turner's landscapes. While we may not hope to secure an exact valuation of the personal equation in such subtile forms as these, it is of importance to know when allowance should be made, and in what direction to apply efforts for the amelioration of the defect.

Turning from these distant objects of study, let us follow the example of the wise Confucius, and "mind the things that are near us." In the science we cultivate there are some occasions for micrometric data in physiological research. In every department of medicine it is highly important that observers should see, hear, understand, and report accurately, so that others may apprehend rightly the appearances of disease and the effects of remedies.

If it were not for the frequent gleams reflected on every hand from the spectacles of the young, showing that the enterprising oculist with his trial glasses has been abroad in the land, one might think that uncorrected myopia was responsible for some errors. Prof. Hermann Cohn states that about sixty per cent of the medical graduates at Breslau were short-sighted. It is not likely that medical science runs any risk from this quarter. Ordinary short-sightedness does not materially affect observations made at the bedside, even if the observer should be so exceptionally stupid as not to find out his defect during his medical studies, or so remiss as not to avail himself of the

correction afforded by glasses. Besides the sense of form there is the wholly distinct sense of color, in which a considerable number are unconsciously lacking. For a hundred years Daltonism has been recognized as a physiological curiosity, but it is only a few years since its practical bearings have attracted attention of persons long familiar with the importance of the errors of vision for form.

Examination of something like a quarter of a million persons, in different parts of the world, shows that about four per cent of the males in any community may be counted on as radically color blind and relatively unfit for occupations requiring the use of the color sense. Dr. Jeffries relates an instance of a color-blind boy at the Boston Institute of Technology, who failed in chemistry, which he had chosen as a profession, because without some normal-eyed person by his side he could not determine the color of precipitates.

Apart from this congenital and incurable fault, experts have detected a hitherto unsuspected amount of ignorance of colors and color names among males of all ages and all degrees of education. It shows itself among teachers of physics and even among those who have technical uses for the nicest color sense. Virchow, at the meeting of the Anthropological Society of July, 1878, urged the practical teaching of colors, as he had found that the majority of young men were incapable of selecting with certainty the finer shades of the most common colors. In his experience, "It was exceptional that a medical student could tell whether a red shaded into a black, blue, or brown, or whether a yellow shaded into gray, white, or green." He continues: "This was a lamentable defect of the eye very seldom dependent on color-blindness, but on ignorance of color and lack of practice."

It would not be a wholly fruitless labor if some one with a trained and sensitive ear were to take the pitch of certain sounds heard in thoracic auscultation, and then test a medical class by means of organ pipes to ascertain if these sounds do not sometimes pass the limits of hearing in those whose range

is not of the highest. Dr. Wollaston remarked total insensibility in some persons to the sound of a small organ pipe, which in respect to loudness was far within the ordinary limits of hearing. There are individuals who have keen ears for the lower sounds who never hear the squeak of a bat, the cricket's note, or even the chirrup of a sparrow. Sir John Herschel states that while some persons not at all deaf can just hear a note four octaves above the middle E of the piano, which is below the chirrup of a sparrow, others have a distinct perception of sounds two octaves higher.

It is a reasonable conjecture that some of us present, who have normal hearing as respects the middle and lower octaves, are defective in the highest without knowing it, and thus fail to hear chinking or hissing sounds like the percussion nôte known as the cracked-pot sound and some sibilant râles, fine crepitation and creaking friction sounds to which others are acutely sensitive. It will be understood that this personal equation bears no relation to what is called a "musical ear," which is properly defined as a faculty of distinguishing discords. Like color-blindness, it has probably an anatomical basis, is congenital and not susceptible of improvement. There is, however, in those untrained in music a relative inability to discriminate in the pitch of sounds of percussion and auscultation like the before mentioned ignorance of color shading. In his essay on variations of pitch of percussion and auscultatory sounds, Prof. Flint observes that "to the musical ear, more especially if skilled in discriminating musical tones, a disparity in pitch is more quickly as well as more clearly distinguished." When the beginner finds a difficulty in perceiving a difference in sounds apparent to the practical diagnostician, Prof. Flint has made it manifest by requesting him to compare the two sounds as if they were musical notes, with reference to pitch. If he has had musical cultivation, the disparity is quickly perceived. Such a preliminary training has been found of material service in acquiring expertness in auscultation and percussion.

In an article in the Fortnightly Review, based upon a large

amount of testimony and controlled by the methods in use by statisticians, Mr. Francis Galton states that he finds great differences in the power of forming pictures of objects in the mind's eye. This power of sight-memory is a reversal of the order of events in the original perception. An excitement of the brain propagates itself outward to the visual center back of the retina, producing pictorial irritations more or less true or vivid, according to the vigor of the outward impulse.

In some this faculty is habitually weak, and the propagation will take place only under such peculiar states as dreams, delirium, great excitement, or stimulation by drugs. Others reproduce past scenes with a distinctness little short of actual sight. It was found that the medium quality of mental imagery, though fairly vivid, was incomplete. Only one in sixteen had it in the degree to be desired.

I venture the opinion that this faculty of mental imagery is the basis of that knowledge of topographic anatomy of so great importance to the operator especially, but valuable to the doctor at every turn. Upon it, to a great extent, depends the student's ability to state the relations of nerve, artery, and vein, without resorting to the mnemonic arrangements of N., A., and V., that quiz-masters cram them with. This natural gift, when joined to certain other qualities—self-reliance and mechanical tact—is the making of a surgeon. I have known a man of fine mind, well equipped in these last-named respects, and who had good opportunities for advancement, fail as an operator of the first rank because he lacked this power of visual memory. It is not rare for the surgeon, on the eve of an operation, to refresh the pictures memory drew in fading colors by resort overnight to the anatomical atlas. This serves the purpose in many cases, but it is not the best way of knowing the anatomy of a surgical region.

According to Napoleon, the rarest and most valuable trait in a soldier is "two-o'clock-in-the-morning courage." So, I would say, the ideal anatomist is one who, awakened at midnight for an emergency, has his knowledge at his fingers' ends.

It is the opinion of Galton that in twelve out of sixteen this topographic memory may be developed to a useful degree by education. He lays especial stress upon the testimony of the Director of the National School of Design in Paris, who, beginning with the simplest figures, trained his pupils to study models with the view of drawing them from memory. After four months' practice they had no difficulty in summoning images at will, holding them steadily in the mind, and drawing them with accuracy. He relates the experience of an engineer, who, after a few weeks of systematic practice, found, to his delight, that he had become an adept at color-memory, which, up to that time, had been an undeveloped faculty. Mechanicians, engineers, and architects, who practice the drawing of an intended structure in all its dimensions, usually have mental vision of remarkable clearness and precision. This faculty must have been possessed by the late Prof. Wallace in an unusual degree. By off-hand modeling with colored clays he would give plastic expression to his picture-memory of anatomical details. Doubtless there are many here who remember how, with a few deft touches, he would make tumors rise before the class, or would inflict on counterfeit pelvic viscera all sorts of pathological changes.

In the presence of older and better teachers than myself, it is with diffidence that I hazard the suggestion that a course of practical anatomy, in which the student would be required to draw in outline from memory, or roughly work up in clay, the forms and relations of parts laid bare in his dissections the day before, would be a valuable addition to the present means of instruction.

Conning of text-books on anatomy gives verbal memory; but, according to Galton, bookish methods tend to repress the pictorial gift of nature. It is possible to starve it by disuse, and again to feed it by judicious methods of education. There are many present, fresh from the quiz-room, who can give, by an effort of verbal memory, the layers of structure encountered in making the dissection for inguinal hernia, who can not make

a sharp picture of them in their minds, much less an outline drawing of the relations of the inguinal rings and other parts concerned. If each of ten doctors, taken at random, were to describe faithfully the mental vision he would have of the path of a bullet shot through a given spot in the trunk of a subject, I warrant there would be evidence of personal equation as well as of imperfect modes of instruction. It may be objected that the proposed improvement in the conventional method requires that the student should have an unusual talent for drawing. To make an outline indicating the form and relative position of parts does not call for any artistic power worth the name. Experienced teachers assert that any one not blind, lame in the hand, or imbecile, can acquire at least this degree of proficiency. It is within the reach of any one who can learn the art of penmanship. In educational conventions one hears a good deal said about the *New Education*. Its advocates claim for it that it is the cream of traditional methods worked into a system. It is wholly different from the Chinese plan of committing to memory endless pages from Confucius, and thus loading the mind with good-for-nothing lore. Its primary aim is avowed to be to teach the pupil to see, hear, and understand correctly, in order that he may take up the study and work of after-life as free from defects of his five senses as culture can make him. Practice in drawing is a salient feature. It has been found that along with the training of the hand, this tends to develop quickness and accuracy of perception, and a fidelity in objective memory that is surprising to those educated under the old routine. Courses in music have been for years an element in the public school curriculum in many parts of our country, with results equally gratifying. While it has not been expected that any one can be made to hear notes beyond his normal scale, improvement in the power to discriminate the pitch of sounds has been unequivocal. You and I may consider ourselves too old to go into training of this sort; but in this we differ from a busy practitioner over sixty years of age, a neighbor of mine, who, in a recent affliction, found solace and sub-

stantial self-culture in taking up a course of drawing. We can at least see to it that our own children and the students we send up to *alma mater* in the twentieth century have not only a good academic education, but, better than that, have been taught with especial reference to seeing, hearing, and understanding correctly whatsoever things come up in the life-work before them.

It is a popular impression that when one brings to the aid of the lens in his eye other lenses outside, the chances of fallacy are thereby removed. That this is erroneous all working microscopists are well aware. There is a distinguished histologist in New York who teaches and demonstrates to the apparent satisfaction of his pupils that there is a reticulum in the blood corpuscle which is an exhibition of the network present generally in protoplasmic structures. On the other hand, the great majority of our histologists and the most skilled manipulators of high power objectives assert their inability to see the network spoken of. What they see in his demonstration is, according to them, the usual appearance presented by granular bodies when viewed slightly out of focus. If the drawings made by him represent the cell as he sees it, there is a decided difference between his microscopic vision and that of most experienced observers. This would be an instance of personal equation on the part of some one. As to the party to whose observations a factor of error must be applied, photography alone offers a final judgment. By this means the late Dr. Woodward succeeded in convincing foreign microscopists that the resolution of Nobert's 19th band was not simply a matter of faith but one of sight.

It may turn out that the difference is not one of sight but one of interpretation. The liability to misinterpret besets the path of the scientific observer in every field.

When Carlyle said that "a man sees what he brings with him the power to see," he meant that through the optical apparatus of vision there was an eye of the intellect looking, perceiving, and interpreting. This recipient eye back in the optic lobes or perhaps in the visual center of the cortex, colors every object of sensation whose image passes into it.

The mind is conscious of that object, not as it entered but as it has been refracted by the prismatic medium of personality through which it was transmitted. A great obstacle in the way of seeing things plainly as they are, is a prepossession in favor of a certain view of them. Pride of opinion may thus create a personal equation; so may a love of sensation or a rage for novelty; so may the fanaticism of hypothesis. To a pet hypothesis has been ascribed the quality of assimilating all observations to itself. Standing erect among the facts it is a convenient stem around which the investigator twines his pliant impressions, stem and vine, each helping to hold the other up. It is not my intention to say aught in dispraise of theory as such. It has been well said that nothing is so helpful to the investigator as a good theory. Like wine it is a good servant but a bad master. Used rightly it is a wholesome stimulant, but some thirsty souls are so constituted that they can not take it in moderation. If they once take a sip at a theory they tope with it, and under its influence see things double and lose their mental equipoise, until time and the jostling of critics sobers them off.

It has been recently announced that the new American Society for Psychical Research disclaims that its object is the study of supernatural phenomena. The ground they propose to tread is tolerably safe so long as they confine their inquiry to those mental states in which certain persons, called "thought readers," seem to have the faculty of knowing some of the ideas of others. If we may judge by the career of the English society of that name, there is a tendency in those who concern themselves about "thought transference" to step over into the twilight land of clairvoyance where the marsh meteors soon lead them into a bog. The large proportion of physicians in the American Society is an assurance that it will not be allowed to degenerate, as did the English one, into a medium for giving consequence and permanence to all the ghost-stories treasured in bereaved families as assuring glimpses of the presence of their dead.

Doubtless "there are more things in heaven and earth than are dreamt of in our philosophy," but when an observers' feelings are strongly interested they so influence his judgment as to what he sees of these undreamt of things, as to make him a very unreliable witness. It would be difficult to exaggerate the tendency to self-deception in examining the phenomena of spiritualism when the investigator is possessed with a longing for evidence of the spiritual existence of some dead friend or relative.

Only those rare beings who can get outside of themselves, who are able to put aside the craving for communication with the dear travelers in that undiscovered country, only these are qualified to estimate with judicial fairness the extravagant pretensions of clairvoyance, spiritualism and mesmerism. These are mentioned together because opinions, like other furniture, "go in sets;" and it is in these that the dominant idea referred to becomes a personal equation of notable size. It is a matter for medical men to consider, inasmuch as it is vaunted that those who believe in and resort to these occult powers, have great advantages in diagnosing and curing disease. It is alleged that some persons possess by nature a faculty of seeing through opaque objects; they are clairvoyant, see by transcendent vision things out of the common range. A patient of mine dropped in with a friend at the residence of one of these "psychometric mediums," who nearly frightened her out of her wits by gravely telling her that he could see that she suffered from headache and pain in the side, due plainly to the fact that her liver was bound back to her diaphragm. She thought it witchcraft that he should without examination divine these things, but was somewhat reassured when told by me that as for the headache and sideache, they might be counted on as symptoms in almost every woman that entered a doctor's office, and that she would be in a bad way if her liver was not so anchored. I have never seen or heard on good authority of one of these gifted beings that had the powers of diagnosis possessed by a new medical graduate, and yet belief in the verity of their claims has grown

by waves of popular excitement until it includes people of undoubted intelligence. At times the epidemic has seized men of science and even educated physicians, though the vast majority of the well instructed look on clairvoyance as unprofitable in speculation and quackery in practice.

In the library on Fifth Street, founded by Franklin and his "Junto," is a copy of a report on Animal Magnetism, made by Dr. Franklin and others to the French Academy just one hundred years ago. Like all documents that Franklin had a hand in making, it is thorough and perspicuous. The experiments by which they were convinced of the baselessness of Mesmer's claims are models of ingenuity. They show the master mind of that wonderful Philadelphian, who had a seeing eye of the highest power. Did you ever think how much his vision resembled the spectacles he invented. Half the glass was for near and half for distant objects. Nothing that interested him, either remote or at hand, was he content to view dimly. Upon them all, smoking chimneys and thunderbolts, he directed his clear and true sight. The pretensions of Mesmer alike with the pretentions of tyrants he saw through and exhibited to the gaze of all. At the same time in his report he concedes a certain value to the phenomena exhibited by those said to be mesmerized, they furnish "important evidence of the power of the imagination."

Again and again did the French Academy respond to the popular clamor for investigation, until it dismissed the subject of clairvoyance in a report published in 1837, by stating that the facts furnished have nothing in common with physiology or therapeutics. A standing offer was made by Burdin, and since repeated by others, of large sums of money to any one who should produce a clairvoyant able to read through an opaque medium. Although the experiment has been variously altered at the instance of those making the trial, no one has yet succeeded in winning the prize. The attempts have, however, resulted in the detection of the means by which the credulous have at times been imposed on. When the neurologists of the Society

for Psychical Research shall discover an individual who can satisfy this reasonable demand, it will be conceded that in this direction their labors have not been in vain. Experience forbids us to hope than such a one exists.

For fifty years, those claiming to see blindfold what is not revealed to the eye, have not brought to human knowledge a single new fact concerning the inner workings of things. What discoveries in physiology and pathology would flow from the use of any instrument that would compensate, even in a small degree, for the limitations of sight and hearing! So often baffled and led astray by the inadequacy of the eye and ear, mankind would then have to make allowance for a personal equation in doctors who attempted to solve medical enigmas without its aid.

Alas! for the beautiful dream, no clairvoyants have ever penetrated this veil further than common people; indeed they have left the glorious privilege of adding to the sum of scientific knowledge entirely to folk of five senses only, while they grope on in a limbo where honest minds seem forever doomed to struggle with fraud, credulity, and superstition.

If the Society for Physical Research shall make a report differing in important particulars from the settled coviction of most men of science, again, as often before, will be raised the charge of "bias and credulity," and again will be heard the retort of "scientific prejudice and intolerance."

Between these two extremes it will be hard to find and hold the diagonal line. In such a controversy we shall be much in want of a mental dynamometer, which shall give us some approximation to the personal equation of mental strength in the disputants.

All the traditional methods of gauging the mind depend too much on tests of memory, quite a subordinate faculty. It does not seem at all likely that man shall ever invent any edequate plummet to sound these "abysmal deeps of personality." Nor can he ever be satisfied to turn away from this question as Confucius did from that concerning the number of hairs in the eye-

brow, and say because he does not know how much allowance to make for personality, therefore, he will not care for it as a factor in medical investigation.

Of one thing we may be sure, that, in cultivating our five senses, much may be done to lower all their personal equations. While thus engaged there can be no doubt that we walk on solid ground and in the middle of the road. Instead of forming magnetic circles in the dark, waiting in a pliant hour for spiritual insight to develop to the point of receiving impressions concerning things which shun the light of day, the sure way will be by incessant practice to sharpen the natural powers of observation so as to acquire that professional sagacity which notes myriads of fine differences and resemblances that escape the scrutiny of the untrained intellect. May ours be that clear-sighted skepticism that would discount every personal equation in ourselves and others; that would turn the white light of criticism upon every reputed revelation lest some fallacy steal in under the garb of truth. To free itself from bias and achieve perfect uprightness, the scientific mind must be imbued with a religion in which slight adoration shall be offered to those natural laws that have been called the thoughts of God; in which the best faith shall be honest doubt, the worst unbelief shall be to question the permanence and beneficence of truth, and in which a grievous sin shall be imputed to him who is indifferent to its pursuit. Should it ever want a litany, what better invocation than:

> "Give me no light, great Heaven, but such as turns
> To energy of human fellowship;
> No powers, save the growing heritage
> That makes completer manhood."

Reviews.

A Text-book on Practical Medicine. Designed for the use of Students and Practitioners of Medicine. By ALFRED L. LOOMIS, M.D., LL.D., Professor of Pathology and Practical Medicine in the Medical Department of the University of the City of New York; Visiting Physician to Bellevue Hospital, etc. With two hundred and eleven illustrations. Second edition. Pp. 1102, 8vo. New York: Wm. Wood & Co. 1884.

Formerly it was the custom for authors of books on practical medicine to introduce the consideration of special diseases by a discussion of the general principles of pathology and therapeutics; and in these broader dissertations one was apt to find evidences not only of the author's style of writing and method of thought, but also his order of examination, his habit of observation, and the legitimacy of his logic. This custom is not extinct and should not be, but it is not striking as of old, and it may be hoped that in the future it will expand into primitive dimensions, as a reader beginning the study of a new work needs some kind of an introduction to its composer, as much as the tourist needs a chart of the country he is about to visit for the first time.

It is not always essential that one reads all the general introduction in a work on practical medicine in order to obtain a correct measure of the author, but a fair estimate may be made from an inspection of some leading topic presented in the introduction, and for this purpose there is nothing superior to the comprehensive subject of inflammation. Prof. Loomis seems to have recognized the propriety of taking initial notice of inflammation, for he devotes his whole general introduction to its consideration, and yet disposes of the matter in eight pages. He does not discuss the subject theoretically, but, alluding to the history of the many and various views of inflammation held

in the past, says that "Into these theories, and the arguments by which they have been in turn supported and assailed, it is not desirable here to enter," and at once proceeds to recite the phenomena of this pathological activity, beginning with hyperemia as the first observable change in the tissues that may be the seat of its operations. Then follow exudation, cellular elements, and suppuration as steps in the progress of change, and closes with cicatrization and resolution, one or the other, as the necessary termination of the inflammatory process.

In describing the inflammation of serous surfaces our author declares that "The first change in this inflammatory process is in the blood-vessels, which contain more than their normal quantity of blood, and it is from the blood circulating in the vessels that most of the characteristic inflammatory products are derived. After the initial hyperemia, the fibrinogen of the exudation comes in contact with the fibrinoplastic material of the tissues (there being a ferment present), coagulation takes place, and layers of fibrin containing few or many cells are formed on the free surface. These layers are called pseudo-membranes or coagulable lymph." A teacher of to-day is scarcely justifiable in proclaiming that the initial step in inflammation is hyperemia of the tissue diseased. If a serous membrane is the seat of inflammation there must have been some antecedent local influence that called the excess of blood to that point rather than to a mucous membrane or other tissue, and while one is ready to admit that most of the characteristic inflammatory products are derived from the circulation, such admission should be qualified by the suggestion that they are thus derived indirectly through the pathological activity of the cells of the tissue involved. Then again, the declaration that the "fibrinogen of the exudation comes in contact with the fibrinoplastic material of the tissues (there being a ferment present)" must surely have arisen in a confused idea of the origin and nature of the three proximate principles that, uniting under a suitable environment, constitute fibrin.

Mucous surfaces are stated to be liable to two forms of

inflammation, "*catarrhal* and *croupous*," and the author asserts that by some diphtheria of the mucous membrane is regarded as identical with croupous inflammation, but points out that the disturbance in diphtheria is more intense, the submucous tissues more infiltrated and the exudation of both the tissues and the surface are infested with multitudes of bacteria, but utters nothing to indicate whether he looks upon the bacteria as the cause or the consequent of the disease. He closes this general notice of diphtheria by saying, "This form of inflammation must be regarded as the local expression of a constitutional affection."

A paragraph is given to Parenchymatous Inflammation; another to Interstitial Inflammation; and a final one on the Fate of Pus concludes the eight pages of the introduction.

Of course, in an exposition so brief of a theme so large, the author could present but a few of the salient points that pressed upon his attention; in what he has said, however, there are instructive truths; but if, as a whole, the introduction is intended as an expression of the best attainments of investigators in the pathology of inflammation, he has missed his aim; and if intended to outline his individual views of one of the most common and nevertheless one of the most important pathological disturbances, the picture is incomplete and unsatisfactory.

The remainder of the volume is divided into six sections. Section I, on Diseases of the Respiratory Organs, occupies 200 pages; II, Diseases of the Digestive System, 212 pages; III, Diseases of the Heart, Blood-vessels, and Kidneys, 189 pages; IV, Acute General Diseases, 248 pages; V, Chronic General Diseases, 67 pages; and VI, Diseases of the Nervous System, 156 pages.

A uniform method of presenting the separate diseases is carried out by the author under all the sections. Under the name of the disease is given a brief, clear definition of what he includes in the name, and then follow, in broad-faced type, the sub-heads, Morbid Anatomy, Etiology, Symptoms, Differential Diagnosis, Prognosis, and Treatment, always in the same succession, and these features make easy reference to any thing

desired—a point frequently of both comfort and value to student as well as practitioner. The discussions under these subheads are generally brief, but clearly and intelligently set forth, without redundant verbiage. There is, however, a wise discretion exercised in the extent to which differential diseases shall be presented, based on the importance of the disease. For example, croupous bronchitis is disposed of in two pages, while acute lobar pneumonia has thirty-two pages devoted to it.

Prof. Loomis is not fully in accord with the modern doctrine of the bacterian origin of specific diseases. As already noted, he speaks of the diphtheritic effusion swarming with micrococci; and in discussing the etiology of acute phthisis he recites the experiments of Koch with the bacillus tuberculosis, and admits that many eminent pathologists concede the correctness of Koch's conclusions; but for himself, he feels that there is still room for doubt. In his preliminary remarks, under Section IV, he says the germ theory is readily accepted by those "whose opinions are not based upon clinical experience and actual disease," but that at present the strongest proofs are not sufficient to warrant the broad generalizations on the etiological powers of the bacteria so commonly indulged in by enthusiastic bacteriologists. As his book was completed before the German, French, and English cholera commissions had reported the results of their investigations, he had no knowledge of facts observed and conclusions reached by these scientists; but, as the facts existed at the time he wrote, his views were against the germ origin of epidemic cholera.

The therapeutics of our author are firmly stated, and correspond with his pathological teachings; and though often bordering on the heroic, there are not a few cautions against excessive medication, and frequent allusions to the restorative powers of nature, and admonition to be careful not to thwart them by the ill-judged use of drugs or other therapeutic agencies. In his preface he advises that his work is a revision of his lectures delivered for the past eighteen years; and one can freely say that, for a book of this genesis, it is to a degree

above the average free from that stereotyped method of medication so often apparent in the teachings of those who have been for a score or more of years rehearsing from the platform the ideas of therapeutics that they studied and adopted at the beginning of their professorial career.

In the preface the author also informs us that the illustrations, with but few exceptions, have been made from sections of morbid anatomy prepared by his assistant specially for this work. The artists have done their duties well, and the illustrations are admirably suited to their respective purposes. Another prefatory announcement of the author is that he writes of diseases in their American types, where there is such a type, and his readers will find the book American in all its leading characteristics. J. F. H.

Clinic of the Month.

On The Surgery of the Epiphyses: A clinical lecture by C. G. Wheelhouse, F. R. C. S., Consulting Surgeon to the General Infirmary, Leeds:

Gentlemen: In your experiences in the field of surgical practice you will be called upon to traverse many thorny paths; and I venture to predict you will find few more thickly beset with difficulties than those which will tax your skill in the treatment of accidental injuries of and around the joints of children and young subjects.

You may have prepared yourselves by the most careful, painstaking, and accurate study of books; you may flatter yourselves that you have been close observers of all such injuries as have come under your observation, whether in hospital or in your more private experience; and yet, unless I am very greatly in error, you will, every now and then, be brought face to face with some such injury as will not only tax all your surgical acumen, all your anatomical knowledge, and all your experience, but concerning which you will feel after all that, both in diagnosis and in treatment, there are elements in the case about which you can be by no means either perfectly clear or happy.

I am sure I need hardly remind those of you who make good use of that most excellent institution, our Wednesday morning consultation, how often such cases are brought before us as a "staff," as a "court of decision," in which various opinions have been formed by as many people as have been consulted in the case before we see it, and in which even we, with all our large experience, are sometimes unable exactly to agree.

I am not speaking of *bona fide* "recognized" fractures and

dislocations, such as are most minutely described in your lectures and in all your surgical text-books. These, I need not say, you ought, and no doubt will, recognize easily enough; but of certain cases in which the nature of the accident that has happened is uncertain and unascertainable, in which the symptoms and conditions present will fit in with no known description, which will in some points answer to the usual descriptions of a dislocation, in some to those of a fracture, and in some to those of both, and which yet, when all are grouped together, will present some inexplicable features and will leave you doubtful what the real nature of the injury is after all.

If such a case as this be taken, as in a large number of instances they are, to a "bone-setter," it matters little save to the sufferer either what he thinks or what he does. If he succeed, in his rough and ready way, in rectifying the evil it is well; and if he do not and the patient be permanently crippled, it is rarely even reckoned against him as a want of success. But it may be—I have seen very painful instances in which it has been—very differently dealt with as regards the duly qualified surgeon. He has often been dragged into a court of law, and under a charge of *malapraxis* has had to bend under the weight of heavy penalties, whereas an unqualified practitioner is permitted to go scot-free, because having done his best and failed the fault has been considered to lie not so much with him who, according to his light, has done the best he could as with those who were unwise enough to ask his advice in preference to that of a properly qualified practitioner. Of us, as educated men, greater things are expected, and provided only we are true to ourselves and to each other it may safely be so.

Of the bones, anatomically, the charlatan knows nothing, nor has he any real conception of the anatomical construction of the joints. In a rough and ready way he knows, perhaps, their forms and the movements of which they are capable, but of their physiological structure and bearings upon each

and on other structures he is ignorant; and most of all is he ignorant of the special peculiarity by which the bones and joints of the young are adapted to the special conditions of their life.

I am not able, and I greatly regret that I am not, to show you the complete skeleton of a young subject. If I had one I should point out that there exist in it certain differences from the skeleton of an adult so plainly marked that it would be impossible for the least observing student to pass them over without being compelled to take note of them. Thus, if I show you—as I am able to do—side by side the skull of an adult and the skull of a child, you may see at once what I mean. While in the adult the bones are all so firmly interlocked and so completely united that practically they may be regarded as one bone, in that of the infant no two are permitted directly to touch each other; between each a layer of unossified membrane or cartilage remains, in some places larger, in some less, but sufficient in every case to admit of some expansion and contraction under varying conditions, and to permit the rapid and easy growth of the various parts of the brain within. Let me remind you of the freedom with which the sinuses from the interior of the skull communicate with the veins upon the exterior, and how greatly more numerous are the points of communication between these two sets of vessels in the infantile than in the adult skull, and then let me ask you what reason you can see for this.

You know that at birth the head and upper extremities of a child are, so far as development is concerned, in a state of very decided advance upon that which has been attained by the pelvis and lower extremities, and you have only to reflect on the conditions of the fetal circulation to understand at once the explanation of the fact.

The head and upper extremities have, during their fetal life and growth, been supplied with pure arterial blood direct from the placenta, while the pelvis and lower ones have had only the impure supply made up of half pure and half impure

blood. Thus, while the parts and organs necessary for the maintenance of life from the moment of birth are at the time of birth capable of fulfilling their ultimate function already perfectly, those which are not then necessary remain undeveloped.

Except that they may grow and be ready by the time they become necessities, the lower limbs of an infant are but useless appendages; but it is not so with the medulla oblongata, and with the parts necessary to enable it to take the breast, to swallow and to digest its food, or to aerate and oxygenate its blood.

So, also, for many a month to come, during the period of unsteadiness and instability of gait, and of feeble muscular development, it is fundamentally necessary that the whole bony framework, and especially that of the head, should remain soft and pliable, and capable of yielding under blows and pressure to a degree that will be quite unnecessary in later life; and on this principle the whole skeleton of the child is built.

With one or two remarkable exceptions there is not a bone in the frame that is perfected until long after birth, and the greater proportion of them remains in an unfinished condition till the full future stature of the subject has been attained.

Suppose, for instance, a child of three or four years of age is brought to you with a complaint that something is amiss with its elbow. You find on examining it carefully that the natural range of flexion is considerably restricted. You find that the radius while it will roll upon the ulna does so stiffly and with difficulty, and apparently quite painlessly; in front of the outer condyle of the humerus you find a prominence which ought not to exist there, and which, when you rotate the radius, rolls under your fingers and is manifestly the head of the radius—rotating not as it should do on the capitulum, but upon the front of the outer condyle.

You not unnaturally suspect a dislocation, and you inquire what accident has happened? You are assured that no accident of any kind whatever has happened at all, and that no

violence has been done to the limb; that it has always been an awkward joint ever since the child was born, and always a source of trouble and anxiety.

You may, not improperly, be suspicious that something is being kept back from you, intentionally or otherwise, and I think it not unlikely that you may end by believing that some unknown injury has been inflicted on the joint by which the radius has been displaced.

Now there is an injury of this kind which may be and which often is inflicted quite unwittingly on the joints of the arms of children, and which may in such a case have been overlooked. One or other epiphysis may have been loosened and displaced by improper traction upon the limb.

Even this may be denied, and again you may be reminded that the deformity has existed, as far as is known, from birth or soon after, and that no accident has ever been known to have occurred. In such a case you can not be too careful, and you can not spend too much time over its investigation. Measure the two limbs carefully; measure the particular bones of the two limbs carefully; and if you find that the radius of the one side is decidedly and clearly longer than that of the other, do not forget the fact that it may be that the epiphysis of one may have grown unduly, and that the deformity may, so to speak, be a natural one, and had better be left untouched. Nature may diminish the evil, while unsuccessful surgical interference can only make it worse, and may lead to discredit on your part.

I dare say you have often seen a sight which to me is a very painful one, and one which invariably makes me shudder, namely, how an ignorant or thoughtless parent or nurse may be seen swinging a child of tender years freely round by its extended arms. You can not have failed to notice the ruthlessness with which a hurrying adult may often be seen dragging a weary child along, or lifting or throwing it by an extended arm over the edge of a causeway or some such impediment, and little thinking of the terrible suffering they may be inflicting upon the child.

If such a child be brought to you a few days later suffering with tenderness and swelling in the neighborhood of the joints of the arms, and you inquire whether any accident has happened, of course you will be told there has not, and the frolicking or the dragging will have been wholly forgotten.

In the majority of instances such a case will be presented to you as one of "rheumatism," and if you be unwary you may accept and act upon the supposition; but if the subject I am bringing before you to-day has impressed itself, as I fain would hope it will, upon your minds, your thoughts will fly at once to the line of epiphysial growth about the joints; you will remember that it is peculiarly prone to injury, and liable to inflame, and that the inflammation if it be not speedily checked is pretty sure to lead to suppuration or ulceration, and may be followed, probably enough, by acute periostitis, osteomyelitis, and even in some cases by septo-pyemia and death.

Inflammation excited in this or other ways, as by cold, exposure to damp, to overstrain, or to other traumatic injury, is especially liable to lead to suppuration.

You will without doubt have noticed how very numerous the cases of hip-joint disease which come under the care of the surgeons of this institution are. For many years we had been inclined to regard all these cases as instances of strumous disease, and of constitutional origin; but of late years, noting how healthy the subjects of them were in other respects, and how entirely wanting they were in any other evidence to bear out the theory of strumous origin, we have come to look upon them as much more frequently traumatic in their initiation.

A child whose health has previously been unimpeachable meets with an accident not, perhaps, thought seriously of at the time, and which leads only to a few day's disablement and stiffness of some one or more joints—it may be of the hip, or of the knee, or of the ankle—and after a little while all seems for a time to get well again; but after a few weeks

the joints begins to be painful again, becomes puffy or swollen, is the seat of a good deal of nocturnal pain, and finally becomes so manifestly the seat of disease that it is brought up for examination. It is found to be swollen, tender to manipulation, hot, and if carefully examined, probably boggy places will be found about it; and if an exploring needle be introduced into one of these pus will be found to exude; if an incision be then made and a finger be introduced, or a probe if a finger can not, it will not unfrequently be found that at the bottom of the wound bare bone will be detected; not necessarily dead bone, but bone from which the periosteum is ready to strip on the smallest provocation, and which, unless great care be taken of it, will certainly die, and that to an extent much greater than would in the first instance have seemed likely, but which, if kept rigidly at rest, freely and thoroughly drained, and protected from the burrowing of matter under the periosteum, may even yet do well. The case may thus end as one of inflammation simply of the growing bone, and happy the subject in which it does so. But not unfrequently the portion of the shaft immediately separated from the epiphysis by the suppuration does eventually die, and must either be removed by the surgeon, or by a long, painful, debilitating, and dangerous process, has to be extruded by nature.

Such partial necrosis in the neighborhood of an epiphysis is not unfrequently seen in connection with the lower end of the femur; and I can call to mind many instances in which both I and my colleagues have been called upon to remove such under circumstances of great difficulty and danger. I have seen the popliteal artery and vein both cut across by such a sharp sequestrum in making its way to the surface, and I have been called upon to amputate the thigh under similar circumstances, and have lost my patient because the operation came too late to obviate the effects of preceding hemorrhage. But the mischief may not stop short by the formation of a small sequestrum such as this; it rarely does

so. Much more frequently it goes on to the destruction of the greater part, oftentimes of the whole, of the diaphysis of the bone.

How fortunate it is that the bones are supplied with their nourishment in sections, the ends through the epiphyses while the shafts are in the main developed by subperiosteal growth, can hardly be overestimated. If it were not so, if it were not for the limiting influence of the epiphyses, we should rarely see the recoveries we now look for almost with certainty in the many cases of necrosis which come before us, but should have entire bones perishing and coming away, to the sore detriment and often entire loss of utility in the limbs.

The Relation of the Epiphyses to Dislocations and Fractures. I think it was the occurrence of one case after another in which some difficulty had arisen as to the diagnosis and treatment of injuries of the elbow-joint which first prompted the idea and led me to remember the many occasions in my life in which similar difficulties had confronted me in my individual capacity.

One such occurred to me while I was on the surgical staff of the dispensary; and it made all the greater impression on my mind because of the mental attitude in which I found the parents of the child. A supposed simple dislocation backward of the bones of the forearm at the elbow had been treated in this institution under the care of the late Mr. Teale, and had resulted in a considerable amount of deformity, with tolerably free movements of the joint, but accompanied by some permanent stiffness and locking.

Now, the mere fact of deformity remaining after the supposed reduction of a simple dislocation put me on my guard and led me to make a minute and careful examination of the parts; and I came to the conclusion, and did my best to explain to the parents that the injury, so far from being a simple dislocation, had really been a dislocation accompanied by fracture through the epiphysis; that the remaining locking of the joint in particular movements and the deformity depended, not on the consequences of the dislocation, but on those of the fract-

ure by which it had been accompanied; and that though the joint had not been restored to its original condition of perfection, the result was, for such an injury, a very excellent one, and one with which they had every reason to be content. But they were not, and took legal advice upon the subject and threatened an action at law against Mr. Teale, and were finally only dissuaded from proceeding with it by the assurance of my then partner, the late Mr. Garlick, that they had no ground for any such action, and could not possibly hope to succeed in sustaining it.

You may ask, and not unreasonably, how you are to protect yourselves under similar circumstances, and I would reply by one or two very simple suggestions:

1. You should never consider your knowledge of the bones to be perfect until you have made the anatomy of the epiphyses as thorough as that of every other point in connection with them, remembering or providing yourselves with the means of reference to the age at which they become individually consolidated to the rest of the bones.

2. In undertaking to deal with a dislocation or with a fracture in the immediate neighborhood of a joint, especially in children and young subjects, you should never forget to recall their existence and their anatomy to mind, or fail to remember the relations they bear to the bones under consideration, and especially the exact anatomical relation which each epiphysis bears, not only to the joint of which it forms a part, but also to the diaphysis of the bone, of which it is a component element.

3. If you have reason to believe or think that their implication will affect the ultimate result of the case, you should make a point of carefully explaining, from the very first, your doubt or fear to those who place it under your care, and to disclaim all responsibility for future conditions which it may be impossible, by the greatest care and the highest skill, to prevent.

4. Lastly, a consultation with a brother practioner is an unfailing safeguard.

You will, I think, find each one of these suggestions to be of intrinsic value; for if, in dealing with an injured joint you know that the consolidation of the bones which enter into its composition is completed, you may at once dismiss all idea of epiphysary complication; while, on the other hand, if it be not, you have to consider the accident in a double light; first, as such an injury would affect a fully developed joint; and, secondly, as it would or might affect it with such complication as may have been introduced by the presence of the epiphyses.

Thus, supposing an injury to have happened to the elbow-joint, and to consist as you think, of a simple dislocation backward of the bones of the forearm, the age of a patient may make a very material difference as to the opinion you form concerning it. If he be over twenty you will probably find but little difficulty either in reducing the dislocation or in retaining the bones *in situ* after reduction; but it may be very much otherwise with a patient of more tender age. With such a one you may find matters equally simple and easily dealt with; but you may, on the other hand, find that neither is the reduction so easy as usual, nor, reduction having been effected, that you are able to retain the bones in their normal position, but that they tend persistently to revert to the abnormal one. In your efforts to effect the reduction you may possibly have felt something like "crepitus," and then more minute and careful examination is not unlikely to reveal the fact that the lower epiphysis of the humerus has been separated from the shaft, and that the whole joint, consisting of the epiphysis with the bones of the forearm attached to it, has been drawn up behind the stump of the diaphysis.

Now think for a moment how widely different must the after-treatment in these two cases be. In the former, simple rest for a while in the restored position is all that will be required, whereas in the second, without firm, retentive apparatus the displacement will be almost certain to recur, and unless the fracture be kept up for a length of time sufficient

to command reunion of the parts, may end in failure, disappointment, and disgrace.

This is only one of instances almost innumerable that I could quote as having passed under my own observation; and in young subjects there is scarcely a dislocation or a fracture in the neighborhood of a joint that may not be thus complicated, nor one in which, if you be wise men and good surgeons, you will fail to suspect and search for some such complication. And if the advice that you should master the ages at which the epiphysial growth of the individual bones is completed is sound, I am no less certain of the equal soundness of my second recommendation, namely, that you should study with equal care the exact relationship that exists between the epiphyses and the shafts of the bones.

Unless you be equally clear on this point, too, you may be led into many otherwise avoidable mistakes. Let me illustrate this position by reference to the upper epiphysis of the humerus.

For a long time, and by many surgeons of the highest eminence, it was believed and was taught that the tuberosities belonged to the shaft, whereas in truth they are included in the epiphyses, and in case of its separation belong, with the head of the bone, to the upper and not to the lower fragment. And this, when you come to study the attachment of the muscles and the displacement which, in case of separation, those muscles will cause, is a matter of very great practical importance, and may lead you to treatment which may be correct or otherwise in proportion to the extent and correctness of your anatomical knowledge.

On this point Prof. Smith writes thus: "I have elsewhere pointed out the error committed by Vidal and other writers in supposing that the tuberosities of the humerus belonged to the shaft of the bone, and shall now endeavor to show that a similar error has been committed with respect to the lower epiphysis of the humerus; and that those authors who have written upon the subject of injuries of the elbow-joint

have confounded with each other fractures above the condyles and disjunction of the epiphyses from ignorance of the anatomical fact that the lower epiphysis of the humerus does not include the condyles, which belong entirely to the shaft of the bone; the epiphysis includes nothing but the trochlea and the capitulum. The fundamental mistake of placing fracture through the line of the epiphysis among supracondyloid fractures (as has been done by Malgaigne, Vidal de Cassis, Dupuytren, and others) has involved the equally glaring error of distinguishing these two injuries from luxation of both bones backward by the same diagnostic sign, namely, the loss of the normal relation of the olecranon process to the condyles of the humerus."

Fortunately, gentlemen, it is not often that we are able to demonstrate what has actually taken place in accidents such as these. In the majority of instances they are simple fractures or dislocations, and the true condition of the parts is hidden beneath unbroken skin; but now and then it happens, either because the injury forms part only of some more serious accident or because it leads to consequences which are happily uncommon and necessitate amputation, we are enabled to do so. When we are, the illustration becomes doubly valuable, and I am able to show you one such to-day.

In this preparation we have one such which implicated the lower extremity of the femur. The patient was a youth aged about seventeen, who had been caught in some machinery and had been violently twisted around. A serious injury to the knee was the result, and he was admitted into the infirmary under the care of the late Mr. Samuel Smith. A fracture very low down in the shaft of the femur was diagnosed, and it was found impossible to rectify the displacement which had taken place. The accident had occurred a few days before my election as a surgeon to this institution, and the case was among the first handed over to my care by Mr. Smith. The preparation has, therefore, an especial value on that account in my eyes, and is one to which I have often had occasion to refer.

When I took the case over I found gangrene setting in in the foot and leg, and, by Mr. Smith's advice, I amputated the limb above the fracture; and here we see exactly what had happened. The lower epiphysis of the femur had been torn from its connection with the shaft, and had remained with but little displacement almost *in situ*. The shaft had been driven down into the popliteal space, and had so stretched the vessels, both artery and vein, and the popliteal nerve that gangrene was inevitable; and it was clear to demonstration that no power would have sufficed to replace the fragments in position.

Once since I have seen an almost identical case in the hands of Mr. Atkinson, and a knowledge of what had taken place in this case of mine enabled us from the first to form a correct diagnosis concerning it. In that case Mr. Atkinson endeavored, in the first instance, to excise the displaced epiphysis, but without success, and was compelled, as I had been, to resort to amputation which, as in my case, also proved successful so far as the life of the patient was concerned.

Cases such as these can not fail to make a profound impression on the minds of those who have charge of them, and as when the first occurred to me I registered a mental vow that I would never forget how important a part the epiphyses may play in such accidents, so now, after twenty years of further experience, I stand here thankful for the lesson then learned, and feeling it to be my bounden duty to urge upon you the observance through life of a similar course of vigilance and care.

HEADACHES.—Dr. J. W. Given, of Salem, Oregon, in the proceedings of the Oregon State Medical Society, writes on this subject as follows:

Hyperemic Headache. "The obvious indication is to lessen the amount of brain-work." "Excessive worry" will generally be found to constitute a more important causative element of hyperemic headache than "excessive overwork." He thinks

such "worries" and their occasions should be honestly stated, the trouble thus removed, quiet of mind restored, and thus relieve overtension of the cerebral blood vessels and thus quiet also the "brain cells," which have been overexcited and too long overstrained. "If the cause of worry is one that will grow less with time, the headache may be relieved for the time being by bromide of potassium." Compressing the carotids will also diminish the amount of blood in the head. Plenty of sleep must be secured. Hot foot-baths should be used to divert the blood from the brain. Brisk cathartics often have good effect. Blisters to the back of the neck are sometimes helpful. If the headache is due to systemic plethora, the lancet should be resorted to. General exercise is good. If hypertrophy of the heart is the cause, tincture of aconite and of veratrum to lessen the heart's action and arterial tension should be prescribed. Belladonna plasters over the heart sometimes quiet its turbulent action. In cases of cerebral hyperemia, due to worry and overwork of the brain, systemic anemia often exists. Then chalybeate tonics are especially called for; but as a rule they should not be administered alone. Hyperesthesia of the brain cells is probably best relieved by potassium bromide. But this agent "usually impairs digestion, and, if continued in large doses, will lessen the normal activity of the brain." Dispense with it, therefore, as soon as possible. When the blood-vessels have been so overtaxed as to greatly impair their elasticity, and hence are passively filled with blood, the patient will experience headache by over-turgescence when he lies down—by the law of gravitation, in short. When such a condition occurs, elevate the head by pillows, lie with the arms extended above the head, compress the carotids, and, in some cases, arrange for the party to sleep in a sitting posture. Brain work must be reduced to the minimum. Fluid extract of ergot in commanding doses ought to be given with a view of keeping the blood-vessels contracted. The "common cold headache," "probably due to hyperemia of the brain and a general toxemia of waste products remaining in the blood, will

usually be relieved by hot-air baths, with very small doses of tartar emetic" with stimulants, as ammonia, quinia in large doses and alcoholic drinks, accompanied by mild laxatives.

In Anemic Headache, improve and increase the amount of blood in the head. Give good food and drink, plenty of exercise, and rest and sleep must be insisted on. No medicine can properly take the place of these means. Such patients flourish upon the same principles which a thrifty man applies to his horse. As medicines, iron and quinia are the "stand-bys." Iron preparations least trouble the stomach when given two or three hours after meals. Fowler's solution of arsenious acid and cod-liver oil are useful—the latter especially in the anemic headaches of children. If a weak heart exists, the recumbent position will (sometimes) do the double work of supplying the brain with blood and diminishing the heart's action. Digitalis also tends to make a weak heart strong by slowing its beats, thus affording it more time to take in blood. The anemic headache which follows great loss of blood is often temporarily relieved by wrapping very hot cloths around the head. Alcoholic stimulants will also often afford temporary relief. Of course all abnormal drains should be corrected. In short, each pathological lesion causing anemia should receive special attention.

Toxemic Headache. Dr. Given sums up as among the causes such constitutional troubles as "syphilis, specific fevers, retained biliary secretions and excretions, kidney and skin excretions, rheumatism, lithiasis, and possibly that mysterious something called malaria." When these are the causes of pain, protect the nerves against irritants by opiates, which also relieve pain. To avoid their constipating effects, combine it with belladonna or atropia, as best suits the case. Of course use mercury and iodides to cure syphilis. In cases of specific fevers, protect the nervous system against the poison (if a specific or other remedy is known that will do so), and also against excessive temperature. Cold sponging will relieve the temperature. "Time alone will exhaust the poisons." Bilious headaches are

relieved by calomel and jalap. Chloride of ammonium is also useful. Nux vomica and strychnia salts, according to the manner proposed for administration, protects the nervous system in general against the depressing effects of retained biliary secretions. (Whatever authors of an "experimental" turn of mind may say to the contrary, mercury does relieve, if any medicine does do so, biliary congestions, "engorgements," or whatever is the condition that practitioners of medicine recognize and call by the common name of "biliousness.") Change the food and habits so as to bring the patients back to health. If excessive nitrogenous food is used change the diet. Cathartics may give temporary relief, but they do not change the habit. Constipation of the bowels is a common cause. If he will not adapt his diet to his condition, he must have occasional purgatives. (Fluid extract of cascara sagrada is a remedy worth trying in ordinary cases of constipation that causes headache. We know of many that get on well under its empirical use.) In headaches due to renal secretions, opium renders the system partially tolerant of the presence of poisons. Eliminatives, such as diuretics, cathartics, etc., should be used. The salts of lithium are also serviceable. Hot baths should be used, a free action of the skin ought also to be promoted by clothing, etc. For the rheumatic headache, he advises the free use of alkalies and salicylate of sodium, with opium for the immediate relief of pain. Colchicum is demanded in cases of "gouty headache." Malarial headache is relieved by quinia, Fowler's solution, and tonics. All depressing influences must be avoided. The headache of lithiasis is generally relieved by the use of alkalies and laxatives, with a diet chiefly of vegetables and fruit. Sick headache is probably due to an accumulation of waste products in the blood. In such cases, a thorough emetic will not do harm, and in many cases will afford relief. A good cleaning out with improved compound cathartic pills or any other good cathartic will usually shorten the attack. Let the patient abstain from all active exercise. Among the prophylactic agents used for sick headache are oxide of zinc, arsenic, iodide of potassium

etc. Let experience teach the patient as to the articles of diet and drink to be used, and as to the suitable forms and times of exercise.

Structural Headaches. Inflammations, neuralgia, tumors, tubercles, gummata, etc., are among the lesions that cause this form of headache. Inflammation of the membranes require active cathartics, and also such remedies as potassium bromide, chloral-hydrate, large doses of fluid extract of ergot and cold to the head with the ice-cap. Absolute rest, with the exclusion of all irritants of the sensorium, must be obtained. Neuralgia requires quinine, iron, Fowler's solution, morphia, and atropia for speedy relief. Of course these empirical directions are to be used only after excluding local lesions. Tumors may be suspected if there be persistent headache, accompanied by a "choked disk" and vomiting. The resultant headache may sometimes yield to large doses of potassium iodide. Opium relieves the pain. Syphilitic gummata are generally removed by overwhelming doses of potassium iodide—200 or 300 grains daily. Nothing is curative in tubercular headache. Opium affords temporary ease.

Dynamical Headache. Let the patient learn to practice hygiene, and live according to his strength. Let him sleep as much as possible, never engage in any thing that will greatly tax his vital powers, and lead a quiet easy life. The best medicines are hyoscyamus with camphor, valerianate of ammonia—and opiates if necessary. Weak galvanic currents passed through the head will sometimes improve the nutrition of the nerves.

Reflex Headaches. Potassium bromide is the best agent to relieve the pain of a reflex irritation. Among the frequent causes of reflex headache, which must be inquired into and treated, are defective teeth, eye troubles, nasal catarrh, ear diseases, dyspepsia, ovarian and uterine diseases, urethral and vesical irritation, etc. The headache of teething children is best relieved by potassium bromide, and the several other conditions named should be appropriately treated. (Canada Medical Record.)

THE RARER ACCIDENTAL EFFECTS OF SALICYLATE OF SODIUM. The extensive use which is made of sodium salicylate, and the very large doses of this drug which are now administered, make it desirable that its rarer accidental effects should be widely known, especially as they simulate the symptoms seen in acute eruptive fevers, are of a very grave nature, and have in a few instances led to a fatal issue. It is scarcely necessary to allude to the more common by-effects of the salicylate of sodium, such as profuse perspiration, headache, tinnitus, deafness, vertigo, and delirium of a highly exciting nature, and all those relating directly to the internal tract, such as nausea, vomiting, and diarrhea. In the Medical Chronicle for December, 1884, Dr. Dreschfeld calls attention to the rarer effects produced by this drug, such as a rise of temperature, which may reach 104° or more, various skin affections, such as erythema and urticaria, dyspnea, with great oppression and amaurosis; and he reports several cases in which one or more of these symptoms followed the use of this drug in ordinary doses. In one of these—that of nephritis after an attack of diphtheria—salicylate of sodium was given, and was followed two days after the commencement of its use by a sudden rise of temperature to 103°, severe headache and drowsiness, dry and brown tongue, nausea and vomiting, with a pulse of 120. These symptoms continued to increase in severity. Two days later the patient appeared to be sinking, and although the presence of pus in the urine and of pain in the left renal region seemed to point to pyelitis and pyemia, yet the symptoms corresponded to neither the one nor the other.

The salicylate was then stopped and fifteen grains of quinine given, and in the course of a few hours the temperature came down to normal, and on the next day the patient was in every way very much better; but the urine contained considerably more pus, and in consequence of this the salicylate of sodium was again administered, to be again followed on the next day by headache and drowsiness, and the appearance of a marked erythematous rash on the face, chest, and arms, the temperature being 103.4°, and splenic dullness again increased, with the

tongue brown and dry. The drug was again stopped, and on the day after the patient had again greatly improved. Five days later the same symptoms were again noted, and on examining the urine with perchloride of iron the salicylic acid reaction was obtained, and it was therefore concluded that the patient must have received by mistake a dose of the salicylate. This constant sequence of symptoms after the use of this drug, and their immediate disappearance when its use was suspended, seemed clearly to prove the causal connection between the administration of the drug and the symptoms above detailed; but in order to make it quite sure that these attacks were actually produced by this medicine, Dr. Dreschfeld once more tried a small dose of the salicylate. Five grains were given at 2 P. M., the patient's temperature being then normal, the urine containing a mere trace of albumen and pus, the tongue clean, pulse 72, respiration 18. One hour after the administration of the salicylate the patient had a rigor; the pulse was then 120, the temperature 100.2°, respiration 39, and there was great dyspnea and oppression, the patient being drowsy, her face dusky, and her lips bluish; three hours later the temperature had risen to 101.4°, and a marked erythematous rash was seen on the face, back of arms, and forearms; just as in the previous attacks, so also here, these symptoms disappeared on the discontinuation of the use of this medicine. There can, therefore, be no doubt but that the symptoms above detailed were due to the salicylate of sodium. It is curious to notice that the idiosyncrasy for the drug increased with each successive administration. For, while during the first administration the symptoms only came on on the third day, on the last attack the patient's temperature rose three degrees in one hour after the administration of five grains. The symptoms were not always the same; rash was scarcely perceptible during the first attack, the sickness was absent during the third attack, and the dyspnea was chiefly marked during the first and last attacks, while the rigor was only present in the second and fourth attacks. It was noticed that immediately after each attack the patient passed urine which contained more urea.

Cases of a similar description appear to be of quite rare occurrence, since Dr. Dreschfeld was only able to find records of four cases in which the use of this drug was followed by marked rise of temperature, though experiments on animals have proved that the use of salicylic acid and its allies may be followed by a febrile increase of temperature. The skin eruptions, without pyrexia, however, appeared to be more frequently seen, as several cases have been reported in which urticaria has resulted from the use of this drug in rheumatism. As regards the dyspnea, cases reported by Quincke and Ogston show that this may form the most prominent feature in this complex of symptoms, and may even lead to a fatal issue; while Dr. Dreschfeld further states that he has himself seen this peculiar by-effect twice—once in a case of phthisis, where from its sudden onset it was at first attributed to pneumo-thorax, and once in a case of rheumatic arthritis complicated with mitral regurgitation. Experiments on animals have shown that the influence of the salicylate of sodium on respiration is very similar to that observed in the cases given above. Small doses increase the respiration; large doses produce marked dyspnea, often with diminished respiratory frequency, and eventually death seems to be caused by paralysis of the respiratory center. (Therapeutic Gazette.)

The Treatment of Phthisis.—In an interesting article on this interesting subject, Dr. F. P. Atkinson, M. D., writing to the Edinburgh Medical Journal, says:

No one, I think, can question the fact that the treatment of phthisis has undergone a marked change for the better during the last twenty or thirty years. The cause of the disease is now more considered than the symptoms—specific treatment is abandoned—and residence is recommended in those climates which are most likely to increase the appetite, improve the character of the blood, and promote a healthy interchange of tissue.

Even during the continuance of winter, so long as the wind is in the south or west, gentle out-of-door exercise is preferred

to confinement in-doors, and in many cases the dry, cold, bracing air of the Engadine to the warm, relaxing air of the Riviera. There can be no doubt that it would be a great advantage were all persons suffering from phthisis able to be treated in the climates most suited to their particular case; but this, from various causes, is impossible, and we have to see what means we have at command for bringing about that improvement in health which is necessary in order to effect a cure.

First, then, I would say, it appears to me of little or no consequence what form of phthisis we are called upon to treat, and that the following remedies will be found suitable, with slight alteration, to all stages of the disease. Give syrup of the lactophosphate of lime and iron 1 dram (concent.); tincture of nux vomica 5 minims; tincture of calumba 15 or 20 minims, with a little essence of lemon and water to the ounce, three times a day. A teaspoonful of pancreatic emulsion carefully mixed with water, or a teaspoonful of Lœflund's condensed cream emulsion, or half a pint of koumiss once or twice a day. If the appetite is bad to start with, keep the patient well supported with Brand's essence of beef, or, better still, Valentine's meat juice, and milk; and if stimulant is necessary, give half a sherry glassful of St. Raphael wine twice a day. Paint the chest morning and evening with tincture of iodine till sore; then omit for a time, and afterward commence the painting again. If there is much sweating at night, inject a hundredth part of a grain of atropia subcutaneously; or, especially if the cough is very troublesome, give ten grains of Dover's powder at bed-time. In the commencement of an acute attack, or when any outburst of pyrexia occurs, it may be necessary to give large doses of quinine and digitalis (as much, for instance, as two grains of the former and five or seven minims of the tincture every two hours), in order to bring down the temperature; but still it must be remembered that treatment to be successful must be directed toward a general increase of nutrition. This holds good whether phthisis be proved to be due to germs or not. If there is much hemoptysis, give either some hazeline or acetate of lead and

opium. When vomiting has been a very urgent symptom, I have now and then found Dr. Hughes Bennett's treatment of great service, viz., 10 minims of medicinal naphtha, 1 dram of the compound tincture of cardamoms and camphor mixture to the ounce, to be taken every four hours.

In most cases I have been able to get on very well without inhalations, but have no doubt they might here and there—such as, for instance, where there are very large cavities—prove of very great service. It is astonishing how many really bad cases improve under the above method of treatment; but it is, unfortunately, not altogether suited to the poor, on account of the expense which it involves; yet even they, with continued use of the lacto-phosphates, not unfrequently undergo very material improvement. I consider the lacto-phosphates in every way preferable to the hypo-phosphites, and there can be no doubt we are deeply indebted to Dr. Dusart for such useful and extremely pleasant remedies. As he says, "they act as excitants of all the nutritive functions, insure digestion, bring back or increase the appetite, and generally improve the vital energies."

THE NEW TREATMENT FOR GONORRHEA.—E. Blackwell, M.D., of New York, contributes to the Medical Record the following:

The process consists first in running through the urethra from a fountain syringe two or three quarts of warm water. The catheter is passed back beyond the inflammation in the urethra, and then the water is turned on and allowed to run through the catheter, and so on out again by the side of the catheter, not entering the bladder. The water first is made comfortably warm, and gradually made warmer, until the patient complains of it being too warm. Thus, of a gradually warmer degree, about three quarts are allowed to run through. Then immediately after a solution of one one-thousandth to one two-thousandth of the bichloride is passed through in the same manner. After three or four such injections the germs are supposed to be killed, and the patient promptly recovers.

My experience thus far is comparatively limited, having

only tested it on four cases, in two of which the treatment was successful and in two not.

The first case that presented itself to me, and upon whom it worked successfully, was one whose discharge appeared about thirty-six hours after intercourse. This short period of incubation led me to think it was urethritis, and I still think it was. After the first injection the discharge was at no time more than a moistening of the lips of the urethra, and after the fourth injection I dismissed him well.

The second case was where the discharge came on about four days after exposure, and which had been discharging for twenty-four hours before I saw it. This treatment was commenced at once, and kept up until five injections had been given him in five consecutive days, when the discharge began again, and I put him on the old-established treatment. During the time of giving the injections the discharge was very little.

The third case was one again where the discharge came on about forty-eight hours after exposure, and he came to me immediately. After using three injections, as described above, the discharge ceased and did not return.

The fourth case was one where no discharge appeared until the eighth day after exposure. Being anxious to make a more extensive and thorough trial of the treatment I gave this man nine injections, as I was positive it was gonorrhea. After he had taken the nine injections, ranging from a one five-hundredth solution to a one two-thousandth solution, he came back on the second day following the last injection with a discharge as bad as in the beginning, and I was compelled again to resort to another kind of treatment.

In the above cases there was every indication that the two instances where the new remedy worked well were simply cases of urethritis, and the two cases where it failed were, without doubt in my mind, true gonorrhea. Hence, from this small data I came to the conclusion it had no merits in the treatment of true gonorrhea, or, at least, would not effect a cure within the limits prescribed for it.

PRECAUTIONS AGAINST CHOLERA.—A lecture delivered at the Parkes Museum, London, on this subject by that eminent sanitarian, Mr. Ernest Hart, is thus reported in the Therapeutic Gazette:

One of the most striking points brought out in his address was that European quarantine by sea, and land quarantine in any case, had invariably proved not only useless in preventing the extension of disease and loss of life, but cruel and mischievous, and had greatly added to the misery and suffering due to outbreaks of cholera. He condemned the attempts at quarantine practiced in France, Italy, and Spain, as being contrary to the experience and the knowledge of facts, as well as to science. Quarantine, he maintained, had never kept cholera out of any European country, or limited it to any European district. He proceeded to describe in detail the system of medical inspection at ports and termini, by which alone, he said, reasonable efforts might be made to prevent or limit the importation of cholera. He pointed out, however, some desirable improvements in the latest code of regulations. Governments had practiced innumerable follies and insanities of quarantine, totally contrary to the rules of science, during the last epidemic. Rome, with its pure supply of water and relatively efficient drainage, had remained free from cholera, while Naples, with its ground-soil impregnated with sewage, and its filthy habitations and polluted water-supply, had suffered most lamentable losses. In Genoa a severe outbreak was immediately traced to the pollution by washing the clothing of cholera refugees in one of the sources of water-supply. It was sharply stopped by at once cutting off this supply. He had excellent reasons for believing that the recent outbreak in Paris was due to the temporary supply of a highly-polluted water to particular districts of the city. The prevalence of typhoid fever was, he once more declared, the true index of the liability to Asiatic cholera. Wherever typhoid prevailed, there the local conditions existed which would favor the propagation of cholera; and until typhoid fever disappeared from among us we could not consider ourselves free from the risk of the im-

portation and the propagation of this epidemic disease. The lessons he desired to urge were: (1.) That quarantine was useless, because impossible in any complete form; (2.) That medical inspection of ports was essential, and with this should go means of isolation, compulsory notification of infectious disease, and the active exertions of all local authorities to free the districts under their control from the known conditions which render them liable to the extension of epidemic diseases when imported; (3.) That disinfection was of most doubtful value under the known conditions of choleraic disease; (4.) That cleanliness, in its fullest and widest sense, was the prime element of safety; (5.) That the prevalence of typhoid fever was the index of the liability to cholera—the diseases were twins in origin and propagation. The President, Director-General Crawford, in moving a vote of thanks to the lecturer, said, that from his Indian experience he entirely indorsed his remarks as to the uselessness of quarantine for the prevention of the spread of cholera. The vote was carried by acclamation. Sir Lyon Playfair, in moving a similar vote to the chairman, also expressed concurrence in all his conclusions. Sulphur fumigations were as ancient as Homer, who described them. Purity of the water-supply and efficient removal of refuse were the best safeguards.

THE RAPID CURE OF DUPUYTREN'S CONTRACTION BY EXCISION.—H. A. Reeves, F. R. C. S. E., Surgeon to the Royal Orthopedic Hospital, London, reports the following case:

The patient being anesthetized I made an incision through the skin down to the band and along its entire length. The skin was then separated from the band, which was thoroughly isolated except at its ends, and was divided at its upper end. I then tried to straighten the finger, which, however, only became straight after the use of a little force, which was accompanied by two loudish snaps due to the rupture of some deep fibers. The band was then freely excised, and after removing Esmarch's bandage, as there was no hemorrhage, I accurately adjusted the skin-edges with fish-gut sutures, and

put the hand in a long back-splint for the forearm and hand with the fingers fully extended. The bandages had to be relaxed in twenty-four hours, having purposely been applied somewhat firmly, in order to keep up full extension. The wound healed by first intention, and within three weeks my patient could play the piano, write letters, etc. I saw her a short time since and find that the finger is quite straight, and that the use of it is so very like the normal as to be termed perfect. I should state that this is the patient's view of the condition as well as mine.

Mr. Hardie, of Manchester, has recently revived Goyrand's operation with encouraging results; but I think the plan I adopted, and intend to repeat, of excising the offending band and removing the cause of the contraction is the proper proceeding. Certainly the result in the case narrated is most satisfactory, and now-a-days we know that cleanliness is all that is necessary in a healthy patient to insure good union of a wound, so that the former risks of the treatment by open division are no longer feared.

Before this case was operated on I was strongly in favor of subcutaneous division; but seeing how slow and sometimes uncertain this plan is, and knowing the liability to recontraction when the band is left, I have no hesitation in stating my belief that excision of the band will be the operation of the future when dealing surgically with Dupuytren's contraction. (British Medical Journal.)

ELECTRICITY AS A GALACTAGOGUE.—J. C. Reeve, M. D., of Dayton, Ohio, writes, in the American Journal of Obstetrics:

Electricity as a galactagogue has been in my hands an uncertain remedy. Sometimes it has failed entirely, sometimes it has yielded excellent results. At present I am using it in a case with such marked benefit that the result has prompted this article. About two years ago, in a case of a second delivery, the milk after the first having been scanty and drying up within a few weeks, it did exceedingly well. When the child was about

a week old the mother did not have sufficient nourishment for it, and artificial feeding had to be resorted to. Electricity was applied twice daily for a week, and once daily for some time longer. The milk rapidly increased, and the child was nursed the usual time. In this case, upon passing the current through the breast, milk could be seen to exude from the nipple and drop down.

In two cases in which the remedy was faithfully tried it did no good, and in two others, if beneficial, the effect was not sufficiently marked to be attributed to it alone. If, however, electricity can be relied upon to benefit one third of our cases of deficient lacteal secretion, it is a valuable resource—certainly one that should never be neglected.

I have always used faradization of the breasts, and that alone, and have not seen any case in which inflammation has been caused by it.

On the Unism of Syphilis.—Professor Kaposi, the professor of skin diseases in the Vienna University, is probably the best known advocate of the theory of the unism of syphilis. In some of his latest lectures he has made a most clear and forcible statement of his views, which are entirely opposed to those held by his contemporaries. He denies that the distinction between hard chancre and soft chancre, or chancroid so called, as to one being followed by general symptoms and the other not, can be made. Both are equally syphilis, and either or neither may be followed at a later period by general symptoms. A patient may have a typical hard chancre and after it have no constitutional symptoms. Patients, where the induration of the sore was unmistakable, had been kept under observation in the hospital and outside of it for from several months to over a year, and in this time had no secondary symptoms whatever. On the other hand, Professor Kaposi had in his practice repeatedly cases of soft chancre which later had gone through all the forms of secondary syphilis. In these cases the utmost care and pains were taken to find an induration, if pres-

ent, but none was discovered. Still further, the professor went on to state that the initial lesion of syphilis, though usually an ulceration or an open sore, was not necessarily or always so. It might be a condyloma, or in other cases the initial lesion was not to be discovered by any external or local appearance. In view of these facts, which he had verified over and over again by the most careful and exact observation of patients, Professor Kaposi divides syphilis into two varieties: (1) Idiopathic, where the disease goes no further than the local affection, which may be either a hard chancre, a soft chancre, or neither; and (2) symptomatic syphilis, with a similar initial lesion but followed by secondary constitutional symptoms. As to the treatment of this disease, the Vienna method is about the same whether one is a dualist or an unicist. The local initial lesion, if with induration and on a tissue which can be so treated, is immediately excised. If a soft sore, or if it is located where it can not be cut out conveniently, as on the glans penis, it is treated simply with emplast. hydrargy., this being now almost the only local application to soft and hard chancres at present in use by Vienna surgeons. If secondary symptoms develop, hypodermic injections of a mercurial salt, usually the protodide, are used throughout the course of treatment. The injections are given in the cellular tissue of the back, on each side of the spinous processes. The syphilis bacillus which Dr. Lustgarten thought he had discovered, is thought by most of the Vienna syphilographers not to be the syphilis bacillus at all. Professor Neuman is outspoken in this belief, and says if there is a syphilis bacillus, it is still to be discovered. Other authorities here are less frank, but say that it is very difficult to distinguish this bacillus from a tubercle bacillus. (Vienna Letter in the Medical Record.)

The Treatment of the Umbilical Cord. — Credé and Weber, Leipzig (*Archiv. f. Gynäk*). The writers set themselves to answer the questions, How is bleeding from the divided cord to be obviated? and, How is inflammation—and its results

—of the fetal portion to be prevented? In the first place, they state that they are dissatisfied with the ordinary methods of secural by tape or linen; but both from clinical experience and as a result of experiments made on cords post-partum, they recommend strongly the use of elastic ligatures as suggested by Budin, and as used by them in Leipzig for the past eighteen months with perfectly satisfactory results. The ligature used is two millimeters thick, and is tightly wrapped round the cord, tied, and again taken half round and re-tied. As by this means the operator can be perfectly certain that there will be no bleeding, the point ligatured should be close to the skin on the cord, as according to the writers the shorter the portion left attached to the child the less chance is there of traumatic inflammation. The after-treatment simply consists in keeping dry wadding round the stump, and carefully drying after the child has been bathed. Since the above treatment has been followed in the Leipzig Maternity there have been no cases of umbilical disease.

Ox Gall.—Albert G. Craig, M. D., of Vevay, Ind., contributes the following to the Indiana Medical Journal:

In flatulency it is very valuable, in fact it is the remedy I have found most effectual in the permanent cure of the disposition to the accumulation of flatus in the bowels. In dyspepsia, associated with constipation, few remedies are more efficient than ox gall. Flatulency is generally relieved in a few days by ten-grain doses of the ox gall given two or three times a day. If constipation does not exist the ox gall alone is all that is required, and constipation, if it is not obstinate, may be overcome by it. In chronic constipation one of the following pills taken at bed-hour will be found a most efficient remedy:

℞. Fel. bovine, inspiss., ... gr. ij;
Ext. colocynth. co., ... gr. i.
M. Ft. pil. No. 1.

Notes and Queries.

Editor American Practitioner:

DISTILLED WATER IN SURGICAL PRACTICE.—The March number of your journal contains an article by Dr. A. W. Johnston, of Danville Ky., On the Progress of Obstetrics, Gynecology, and Diseases of Children, prepared as the annual report on those subjects for the Central Kentucky Medical Association. One would suppose this title would furnish "ample scope and verge enough" for the most enthusiastic collaborator; but, in the seven pages devoted to this subject, the author goes out of his way to criticise a successful ovariotomy performed by me and reported in the Medical News of December 8, 1883.

Your contributor does not question the verity and accuracy of my reported case except to claim that I have accredited the eminent English ovariotomist, Mr Lawson Tait, with something in the technique of the operation which should have been accredited him instead of Mr. Tait. Here is the paragraph of my paper to which objection is made: "Following the practice of the great master in abdominal surgery, Mr. Lawson Tait, of Birmingham, after sponging out the cavity of the pelvis and the lumbar region, I filled the cavity of the abdomen with warm distilled water, by means of a tube running from a basin held above the table. Holding the divided abdominal walls together with one hand, I moved the intestines with the fingers of the other hand so as to wash them thoroughly. The water was then removed with sponges, and this process twice repeated, when the water came out free from the tinge of blood."

The *method* of cleansing the peritoneal cavity here described is that practiced by Mr. Tait (see Lawson Tait on Ovarian Tumors, Wm. Wood & Co., New York, 1883, page 290); but your contributor claims that the use of distilled water in the toilet of the peritoneum is an essential part of the process and

original with him. If distilled water is essential, and superior to other water not distilled, for surgical purposes, and if its use in surgery is original with your contributor, and has been publicly claimed by him, then I have (unintentionally, of course,) accredited to another what is due to him. If, on the contrary, distilled water is not essential and in no respect superior to water not distilled, and has heretofore been used for surgical purposes, then the strictures made upon my reported case are irrelevant and without apparent cause. This is the issue fairly stated, and I propose to meet it fairly and candidly.

The facts in regard to my reported case are these: I operated in the middle of September—a very dry season—and the water in all ordinary sources (cisterns, wells, and springs) was very low, and therefore impure. While preparing for the operation, and *without suggestion from any one*, I ordered from a reliable pharmacist several gallons of freshly distilled water for use in the operation. I was following the principles of asepticism, looking closely to details, and deemed this my best chance to procure pure water in this locality at that season of the year. There is no authoritive evidence that distilled water is in any specific property superior to fresh water from pure lakes, rivers, or cisterns, for surgical purposes. When freshly distilled it is simply pure water and nothing more. This is a chemical fact so universally recognized that discussion seems superfluous. Indeed, my critic quotes Mr. Tait's own expression to this very effect, as follows: "I never do—never have used distilled water—never thought of using it. I use buckets of plain tap water, etc." In reporting the case in question I used the word *distilled* as synonymous with *pure* in the context, my sole purpose being to observe absolute accuracy in the description of details.

The first abdominal section I ever witnessed was performed by the late Dr. John D. Jackson, of this place, and as his pupil and assistant I had charge of the distilled water used in the care of the peritoneum. This was more than ten years ago, and before my self-constituted critic made his debut before the medical public as an original investigator.

In a published article on Pelvic Spina-Bifida, by Dr. T. Gaillard Thomas,* in describing an operation performed by him several years ago, that distinguished surgeon says: "I fully discussed with my associates the propriety of filling the sac with warm distilled water." As this operation was performed before your contributor claims to have introduced the use of distilled water into surgical practice, it may be presumed that Dr. Thomas had penetrated the unknown before he pointed the way.

An original discovery in science or the arts must be an improvement over established means, and must possess both novelty and utility in order to confer distinction upon its author. That your contributor had used distilled water in surgery, and that a physician had reported a case in which it was used by him before the date of my published case, does not, in view of these facts, justify the charge of injustice made against me.

While the features discussed above are the apparent basis of the strictures made upon my reported ovariotomy, the author of those strictures uses this language: "But as a deliberate stroke has been made at my veracity, and as on this floor I first spoke of it, in obedience to nature's first law (that of self-preservation), I deem it my duty to lay the history of my connection with the subject before you."† Never having heard the author report his "connection with the subject" (the use of distilled water), and never having seen any publication from him in regard to it, I am unable to see in what consists my "deliberate stroke" at his veracity. Indeed, never having impugned his veracity, his extreme hyperesthesia upon that point is, to say the least, both remarkable and suggestive. Very respectfully,

L. S. McMURTRY, M. D.

DANVILLE, KY., March 30, 1885.

*Gaillard's Medical Journal, vol. xl., page 239.

†The article under consideration is a paper claimed to have been read before the Central Kentucky Medical Association. The writer of this communication had no knowledge of its existence before seeing it in print.

THE GERM THEORY OF DISEASE.—Prof. Tyndall said in an address delivered at Preston, England:

The three great principles which in aftertime will be regarded as the glory of the present age are the conservation of energy, evolution, and the germ theory of disease. Our knowledge of them is a product of slow growth, for no great scientific discovery springs isolated from the mind. The individual takes in the knowledge of his times, ponders it, finds new meanings in it, and, if blessed with what is understood as genius, shoots ahead of his contemporaries. His achievements, however, have their root in antecedent labors. Thus the system of Copernicus simmered in the mind of Pythagoras; the principle of gravitation and the law of inverse squares were surmised before Newton; Boyle, Hooke, and Rumford did more than surmise the mechanical theory of heat; and the Darwinian doctrine was foreshadowed by the grandfather of the great naturalist, and broadly outlined by Demaillet and Lamarck. So the germ theory of disease, in its earliest glimmerings, appeared centuries ago: but William Budd was the first to see farther than his contemporaries, and his grand generalization has been removed from the sphere of mere observation and analogical reasoning, and converted into a theory founded on the irrefragible basis of experiment. Much of the work has been done in England; but more has been done and is still being done in Germany, where students are, we suppose, all on equal terms and are not handicapped. The discoverer of the *contagium* of splenic fever was a young and perfectly unknown physician, who held a small appointment in the neighborhood of Breslau. With the most unwearying patience and the most consummate skill, this young physician traced out the life-history of *Bacillus anthracis*, and embodied his results in a paper which he put into the hands of Prof. Cohn, of Breslau, who, in 1876, showed it to Prof. Tyndall. The latter was impressed by the masterly execution of the investigation and its pregnant results, and prophesied that the writer of the paper was destined to rise higher. The

young physician was Dr. Koch; and the next time Prof. Tyndall heard of him he was head of the Imperial Sanitary Institute of Berlin, where he had been engaged in labors of the highest importance, among them the discovery of the *contagium* which produces the withering malady, consumption. Dr. Koch transferred the tubercle bacillus from the diseased lung to a nutritive fluid in which it could increase and multiply. With a speck of that crop he infected fresh, pure fluid, and in that way cultivated the organism through many generations. With the bacillus thus obtained various animals susceptible of tuberculosis were inoculated, and though the micro-organisms were, by the cultivation, freed from their first impurities, the disease was infallibly produced. It was known that the disease was communicable; but the merit of Koch's work consists in his detection of what Prof. Tyndall calls the peccant organism, and proving it by fastening upon it the responsibility of the disease. The line of inquiry thus shown to be prolific in results is being followed by many able investigators in Germany, and in France by Pasteur and others. So long ago as 1837, Schwann demonstrated that putrefaction is the work of living organisms; and in 1863 Pasteur followed with the far more elaborate researches which have made his name familiar and famous in all civilized countries. The influence of bacteria upon dead matter had been established beyond doubt when Lister, by a happy inspiration, extended the generalization to living matter, and introduced what is known as his antiseptic system of surgery. Infectious diseases "breed true;" that is, scarlet-fever begets scarlet-fever, smallpox begets smallpox, typhoid begets typhoid, with regularity and certainty; and there seems no reason for doubting that they are all caused by micro-organisms. The difficulty, however, is to assign the specific organism to the specific disease; and, whatever remains to be proved in the cases mentioned above, it is now accepted as demonstrated that splenic fever is due to the presence of *Bacillus anthracis*. Pasteur has verified Koch's results, and corroborated them

in a very remarkable and interesting manner. Koch had found that while his cultivated germs were deadly to mice, guinea-pigs, and many of the larger animals, birds seemed proof against the splenic-fever virus. Pasteur set about determining the temperature at which the organism ceases to propagate itself, and found that to be close to the temperature of the blood of birds. In the infusions the point of suspended vitality was, however, two to three degrees higher than the temperature of the blood of birds; but Pasteur reasoned that the blood is not like infusions, and the corpuscles offer resistance to any attempt to deprive them of their oxygen, which resistance may be equal to a difference of two or three degrees. Accordingly he chilled his fowls and then inoculated them, when they died from splenic fever. Some of those inoculated when chilled were, when the fever was at its height, warmed until the blood reached its normal temperature, when the bacillus was destroyed and the fowls lived. Here, then, we have what may be termed a positive proof that the *Bacillus anthracis* is the cause of splenic fever, and, by analogy, that the germ theory of disease is true so far as it extends. Pasteur, however, was not contented with demonstrating the fact that splenic fever is caused by bacteria. He immediately set about attenuating the virus and trying whether by means of that he could not, so to speak, "vaccinate" animals and render them proof against the germs. After making his experiments he publicly announced that he could protect animals from the disease; and that announcement brought him an invitation from the president of the Society of Agriculture, at Melun, to make an experiment on a breeder's scale, sixty sheep and ten cows being placed at his disposal. Pasteur inoculated twenty-five sheep and four cows with his attenuated virus. Fourteen days afterward the unvaccinated cows and sheep, together with those assumed to be protected by the attenuated virus, were all inoculated with a virulent sample of the *Bacillus anthracis* virus. As the experiment was a public exhibition, a general invitation was extended to witness the

result; and three days after the last inoculation about two hundred persons assembled. Of the twenty-five unvaccinated sheep twenty-one were already dead and the other four were dying. The unvaccinated cows were alive, but tumors had appeared at the points of inoculation, and the animals were so prostrated by intense fever that they were unable to eat. The animals, however, which had been protected by the attenuated virus remained perfectly healthy, and exhibited no sign of any influence of the virulent virus, not even a rise of temperature or soreness at the points of injection. Such a result, witnessed by many of the leading breeders of France, was naturally considered proof positive, and by the end of 1883 no fewer than 300,000 animals had been vaccinated for splenic fever. The immunity enjoyed by the vaccinated is one of the most extraordinary phenomena in the etiology of disease, and it is accounted for by Professor Tyndall on the supposition that *contagia*, being living things, demand certain elements of life, and when those are exhausted they can no longer live. To exhaust a soil, then, a parasite less vigorous and destructive than its virulent representative may suffice; and once the soil is exhausted the virulent type is powerless to injure. Such, in substance, is the germ theory of disease. (Popular Science News.)

A FULL REPORT OF THE GREAT NATIONAL CONGRESS OF SCIENTIFIC ANIMALS.—We copy from our always able and at odd moments genial cotemporary, the New York Medical Record, the following delicate bit of "sarkasm," as dear Artemas puts it, and commend it to "whom it concerns:"

It happened that the beasts of the forest of Ouden, who were learned and skillful in relieving their fellow-creatures' pains, determined to have a General Congress for mutual talk.

They met at the time named and the Lion presided with great ease and dignity.

In making his opening speech the learned President said that theirs was a most noble profession.

He recounted the great progress which it had made, but believed that sanitary science was the thing in which the most glorious triumphs would be gotten. He touched upon the wonderful achievements of anesthesia and vaccination, also upon Harvey and the circulation of the blood; he referred to Hippocrates, Galen, the immortality of the soul and the value of animal congresses, ending with a loud roar, which was well received.

The Cinnamon Bear moved a vote of thanks for this unusually eloquent and profoundly original address.

Thereupon, business beginning, the Goose arose and moved that the Fox be expelled from the assembly, as he had been seen consulting with the Duck, who was known to be no better than a Quack. This motion was immediately carried. The meeting then divided up into sections for the better study of the several scientific problems.

In the Section on Neurology, the Rabbit related the outcome of his special studies on the "Tendon Reflex in the Hind Extremities of Irritable Mules," and showed several flattened skulls to illustrate the effects and beauty of this phenomenon.

In the Section on Physiology, the Frog showed a beautiful instrument for registering in a graphic manner the movement of the kangaroo.

In the Section on Orthopedic Surgery, the Lamb read a paper of great originality upon the "Development of the Hump on the Camel," and showed an apparatus which, if worn constantly for seventeen years, relieved the deformity in a large number of cases. An earnest discussion began as to the real usefulness of this important invention, but it was promptly ruled out of order by the President.

In the Section on "Diseases of Women and Obstetrics," the Goat opened the debate upon the question, "Whether the Physician should Support the Perineum, or the Perineum should Support the Physician?" which was well maintained.

Professor Gulielmus Capricornus read a paper contending that pessaries were a great national blessing and that all animals should wear them.

Professor Suis Ferus reported two thousand operations for sewing up the cervix uteri, with fifteen successful results, upon which he was warmly congratulated.

In the Section on Surgery, the Ring-tailed Ape described his new operation for the treatment of intestinal wounds. This consisted in opening the abdomen, removing the whole abdominal contents, and substituting carbolized cotton, thus making the individual thoroughly aseptic.

The Sacred Ox of Burmah made a report upon plastic surgery. He described a case in which he had successfully attached the hide of a rhinoceros to the back of a horse, thus rendering a saddle unnecessary. He had also transplanted the skin of a hen to the head of the Bald-headed Eagle, which had much relieved that animal from the effects of extreme heat and cold, and put a new face on the whole matter.

In the Section on Diseases of the Throat and Nose, the Elephant related a history of a patient with a hypertrophied proboscis, in which the affected animal could twine the diseased member several times round his own tail—to make a long "story" short.

The Giraffe gave his experiences with sore-throat, which are too long to be reported here.

In the Section on Skin Diseases, the Rhinoceros reported the results of an analysis of one hundred and ninety-seven thousand cases of eczema treated by excision, each one having been treated in a different manner.

The Congress then adjourned to a Grand Banquet, and having visited the insane asylum, two shoe factories, and an orphan home, broke up to meet at the same place next year.

SLEEP, TRANCE, AND DEATH.—"The relationship between sleep, 'the cousin of death,' and death itself is probably real as well as apparent. The distance which separates them is great; but there are intermediate connections, grades of dissolution as of development. Among these the similar states of trance and hibernation are worthy of special notice. For

sleep and for trance, one cause—the exhaustion chiefly of nervous matter, but more or less of every organ and tissue—is assignable. The hysterical stupor is the sleep of nerve-centers worn out with the assault and conflict of stormy reflex action. Healthy sleep is the rest of physical elements wearied with the same strain applied more gradually. Cases have been recorded in which somnolence, continuing for days without cessation, has resembled trance in its duration while preserving all the ordinary features of natural sleep. Various facts support us in associating the hibernation of animals with the same train of organic or functional changes as the other unconscious states which we have been considering. It comes like a habit; it has, one may say, annual return; its apparent cause is the oppression of external cold, and the animals it affects are mostly those which, from their bodily structure or habits, are subject to great periodic variations of temperature. Vital tissue is exhausted and function is in part suspended, probably because the numbness of cold has taken hold on the radicles of the outer circulation and of that of the brain-surface which is connected with it by numerous anastomoses. In such a case anemia would seem to be the cause of the winter-sleep, as there is evidence to show that it is also the cause of that temporary starvation of brain which lulls without arresting its action in the natural repose of each night. We may even regard the lethargy, ended by death, into which man falls when exposed to great cold, as a short and mortal hibernation. The same influence acts upon him as upon the bear or fish, but the power of its shock is greater on his finer and less accustomed senses than on their comparatively coarse organization. So, likewise, in other regions and forms of life, in the weariness, paralysis, atrophy, and gangrene of limbs, in the leafless hibernation of trees and in their decay beginning in the terminal twigs the same teaching is evident—that vascular nutrition in its periodic variations is the parent of activity and of rest, as its absence is of death. (British Medical Journal.)

ON ABUSES IN TREATING TYPHOID FEVER.—Prof. Nothnagel, one of the most eminent physicians in Europe, addressed the College of Physicians of Vienna (*Weiner Med. Woch.*) on the abuses in treating typhoid fever and all other fevers. The great error of the day, he said, is that the physician thinks the fever is to be reduced at all cost. If a physician is called to a patient and he finds an increase of the normal temperature, yet is unable to form a diagnosis at once on account of the absence of other symptoms, he orders quinine or another antipyretic, while in order to avoid risk to the patient a small dose only of quinine is prescribed. But what is the benefit of such a treatment? Does quinine act antipyretically in doses of 10 or 15 grains per diem? Certainly not; such medication can not but injure the patient. Fever is by no means a phenomenon which has to be treated at all hazards like its local occurrence in inflammation, for instance. Fever is one of those beneficent reactions that are compensatory in their nature; it is a bridge, as it were, for the transition of the diseased organism to its prior state of health. He referred to the interesting researches of Metchinikoff, according to which micro-organisms were prevented from propagating themselves by an elevated temperature. A reduction or entire abatement of the febrile temperature does not shorten the duration of the disease for a single day. Some typhoid affections, indeed, which without any therapeutic interference proceed without fever, prove fatal from other intercurrent causes. Cases of persistent or very high febrile temperature only call for an antipyretic treatment. (Therapeutic Gazette.)

SHALL MAN "IN HIS FLESH SEE GOD."—Dr. Connel, President of the Obstetrical Society of Edinburgh, in a recent address before that body said:

I believe—because the highest reason encourages the belief—that vertebrate man, the offspring of child-bearing woman, shall yet "in his flesh see God." Far off as yet is that Divine event, and long ages may roll by ere man is capable of the vis-

ion. For aught I know, it may be some negro race, with their higher spiritual capabilities, who, in fuller light and happier surroundings, will "glorify Him in their bodies, which are His;" but that some such consummation exists even now in the Divine thought I do not for one moment doubt. And even were my destiny to be, like the last red leaf of autumn, whirled forever away, I would still exclaim, "In this faith and hope let me perish!" But materialism itself has an antidote against despair. Let me quote a sentence from one of its most temperate critics. "The philosophy," says George Brimley, "founded on materialism professes the power to elevate human life to heights of felicity and knowledge of which we as yet only dream; that it will bring round the golden year for which poets have tuned their most stirring songs, and prophets yearned upon their watch-towers; and, could it perform all that its votaries promise, what would be the inevitable result? Undoubtedly that the lovelier and the richer life grew—the higher in dignity, the firmer in purpose, the fuller of grand results—the fiercer would rise the longing for immortality; the more should we shrink back, appalled with horror, from the thought of personal annihilation." What is this but to say, in other words, that the conditions of all right living "presage immortality"—that the truly "good great man" has eternity within him? How much more, then, when he feels that he is a fellow-worker with the Central Force, and knows his purest happiness, here or hereafter, to be that he consciously contributed to the glorious issue.

"How to Prevent Contagious and Infectious Diseases in Schools" is the title of a small pamphlet which contains the conclusions arrived at by the medical officers of school associations in London. We copy the following as of interest to both parents, teachers, and pupils:

When may a pupil who has had an infectious disease rejoin the school?" is answered as follows, provided patient and clothes are *thoroughly* disinfected: "A pupil may go home or rejoin the school, after scarlet fever, in not less than six

weeks from the date of the rash, *if* desquamation have completely ceased and there be no appearance of sore throat; measles, in not less than three weeks from the date of the rash, *if* all desquamation and cough have ceased; German measles (Rötheln, or epidemic roseola), in two or three weeks, the exact time depending upon the nature of the attack; small-pox and chicken-pox, when every scab has fallen off; mumps, in four weeks from the commencement, *if* all swelling has subsided; whooping cough, after six weeks from the commencement of the whooping, provided the characteristic spasmodic cough and the whooping have ceased, or earlier, *if* all cough has completely passed away; diphtheria, in not less than three weeks when convalescence is completed, there being no longer any form of sore throat, or any kind of discharge from the throat, nose, eyes, ears, etc., and no albuminuria.

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